

CLAIMS

1. An aminofunctional silicone resin comprising the units:

 $(R_3SiO_{1/2})_a$ (i) $(R_2SiO_{2/2})_b$ (ii)5 $(RSiO_{3/2})_c$ (iii) and $(SiO_{4/2})_d$ (iv)

wherein R is independently an alkyl group, an aryl group, or an aminofunctional hydrocarbon group, a has a value of less than 0.4, b has a value of greater than 0.15, c has a value of greater than zero to 0.7, d has a value of less than 0.2, the value of $a + b + c + d = 1$, with the

10 provisos that 3 to 50 mole percent of silicon atoms contain aminofunctional hydrocarbon groups in units (i), (ii) or (iii), the $-NH-$ equivalent weight of the aminofunctional silicone resin is from 100 to 1500, the aminofunctional silicone resin is in the form of a neat liquid, solution, or melttable solid, greater than 20 weight percent of unit (ii) is present in the aminofunctional silicone resin, less than 10 weight percent of unit (ii) are $Me_2SiO_{2/2}$ units in

15 the aminofunctional silicone resin, and greater than 50 weight percent of silicon-bonded R groups are silicon-bonded aryl groups.

2. An aminofunctional silicone resin comprising the units:

$(R_3SiO_{1/2})_a$ (i)

$(R_2SiO_{2/2})_b$ (ii)

$(RSiO_{3/2})_c$ (iii) and

5 $(SiO_{4/2})_d$ (iv)

wherein R is independently an alkyl group, an aryl group, or an aminofunctional hydrocarbon group, a has a value of less than 0.4, b has a value of greater than 0.15, c has a value of greater than zero to 0.7, d has a value of less than 0.2, the value of a + b + c + d = 1, with the provisos that 3 to 50 mole percent of silicon atoms contain aminofunctional hydrocarbon

10 groups in units (i), (ii) or (iii), the -NH- equivalent weight of the aminofunctional silicone resin is from 100 to 1000, the aminofunctional silicone resin is in the form of a neat liquid, solution, or melttable solid, greater than 20 weight percent of unit (ii) is present in the aminofunctional silicone resin, less than 10 weight percent of unit (ii) are $Me_2SiO_{2/2}$ units in the aminofunctional silicone resin, and greater than 50 weight percent of silicon-bonded R

15 groups are silicon-bonded aryl groups.

3. An aminofunctional silicone resin according to Claim 1 or 2 wherein R is independently selected from methyl, phenyl, or an aminofunctional hydrocarbon group

having the formula R^1NHR^2 or $-R^1NHR^1NHR^2$ wherein each R^1 is independently a

20 divalent hydrocarbon radical having at least 2 carbon atoms and R^2 is hydrogen or an alkyl group.

4. An aminofunctional silicone resin according to any of Claims 1 - 3 wherein the aminofunctional hydrocarbon groups are selected from -CH₂CH₂NH₂,
-CH₂CH₂CH₂NH₂, -CH₂CHCH₃NH, -CH₂CH₂CH₂CH₂NH₂,
-CH₂CH₂CH₂CH₂NH₂, -CH₂CH₂CH₂CH₂CH₂NH₂,
5 -CH₂CH₂NHCH₃, -CH₂CH₂CH₂NHCH₃, -CH₂(CH₃)CHCH₂NHCH₃,
-CH₂CH₂CH₂NHCH₂CH₂NH₂, -CH₂CH₂CH₂CH₂NHCH₂CH₂CH₂NH₂,
-CH₂CH₂NHCH₂CH₂NHCH₃, -CH₂CH₂CH₂NHCH₂CH₂CH₂NHCH₃,
-CH₂CH₂CH₂CH₂NHCH₂CH₂CH₂NHCH₃, and
10 -CH₂CH₂NHCH₂CH₂NHCH₂CH₂CH₂CH₃..

5. An aminofunctional resin according to Claim 1 or 2 wherein the aminofunctional silicone resin is selected from

aminofunctional silicone resins comprising the units:

(i) $((CH_3)_3SiO_{1/2})_a$

5 (ii) $(C_6H_5(CH_3)SiO_{2/2})_b$

(iii) $((CH_3)RSiO_{2/2})_b$ where $R = -CH_2CH_2CH_2NH_2$

(iv) $(C_6H_5SiO_{3/2})_c$,

aminofunctional silicone resins comprising the units:

(i) $(C_6H_5(CH_3)SiO_{2/2})_b$

10 (ii) $((CH_3)RSiO_{2/2})_b$ where $R = -CH_2CH_2CH_2NH_2$

(iii) $(C_6H_5SiO_{3/2})_c$,

aminofunctional silicone resins comprising the units:

(i) $((CH_3)_3SiO_{1/2})_a$

(ii) $((CH_3)RSiO_{2/2})_b$ where $R = -CH_2CH_2CH_2NH_2$

15 (iii) $(RSiO_{3/2})_c$ where $R = -CH_2CH_2CH_2NH_2$

(iv) $(C_6H_5SiO_{3/2})_c$,

aminofunctional silicone resins comprising the units:

(i) $((CH_3)_3SiO_{1/2})_a$

(ii) $((CH_3)RSiO_{2/2})_b$ where $R = -CH_2CH_2CH_2NH_2$

20 (iii) $(C_6H_5SiO_{3/2})_c$

or

aminofunctional silicone resins comprising the units:

(i) $((CH_3)_3SiO_{1/2})_a$

(ii) $(C_6H_5(CH_3)SiO_{2/2})_b$

25 (iii) $((CH_3)RSiO_{2/2})_b$ where $R = -CH_2CH_2CH_2NH_2$

(iv) $(C_6H_5SiO_{3/2})_c$

(v) $(SiO_{4/2})_d$

wherein a, b, c, and d are as defined above.

6. An aminofunctional resin according to Claim 1 or 2 wherein the aminofunctional silicone resin is selected from

aminofunctional silicone resins comprising the units:

- (i) $((CH_3)_3SiO_{1/2})_a$
- 5 (ii) $(C_6H_5(CH_3)SiO_{2/2})_b$
- (iii) $((CH_3)RSiO_{2/2})_b$ where $R = -CH_2CH_2CH_2NH_2$
- (iv) $(C_6H_5SiO_{3/2})_c$,

aminofunctional silicone resins comprising the units:

- (i) $(C_6H_5(CH_3)SiO_{2/2})_b$
- 10 (ii) $((CH_3)RSiO_{2/2})_b$ where $R = -CH_2CH_2CH_2NH_2$
- (iii) $(C_6H_5SiO_{3/2})_c$,

aminofunctional silicone resins comprising the units:

- (i) $((CH_3)_3SiO_{1/2})_a$
- (ii) $((CH_3)RSiO_{2/2})_b$ where $R = -CH_2CH_2CH_2NH_2$
- 15 (iii) $(RSiO_{3/2})_c$ where $R = -CH_2CH_2CH_2NH_2$
- (iv) $(C_6H_5SiO_{3/2})_c$,

aminofunctional silicone resins comprising the units:

- (i) $((CH_3)_3SiO_{1/2})_a$
- (ii) $((CH_3)RSiO_{2/2})_b$ where $R = -CH_2CH_2CH_2NH_2$
- 20 (iii) $(C_6H_5SiO_{3/2})_c$

aminofunctional silicone resin comprising the units

- (i) $((CH_3)_3SiO_{1/2})_a$
- (ii) $(CH_3)_2SiO_{2/2})_b$
- (iii) $((CH_3)RSiO_{2/2})_b$ where $R = -CH_2CH_2CH_2NH_2$
- 25 (iv) $(C_6H_5SiO_{3/2})_c$

aminofunctional silicone resin comprising the units:

- (i) $((\text{CH}_3)_2\text{RSiO}_{1/2})_a$ where $\text{R} = -\text{CH}_2(\text{CH}_3)\text{CHCH}_2\text{NHCH}_3$
- (ii) $(\text{CH}_3)_2\text{SiO}_{2/2})_b$
- (iii) $(\text{C}_6\text{H}_5(\text{CH}_3)\text{SiO}_{2/2})_b$
- 5 (iv) $(\text{C}_6\text{H}_5\text{SiO}_{3/2})_c$

aminofunctional silicone resins comprising the units:

- (i) $((\text{CH}_3)_2\text{RSiO}_{1/2})_a$ where $\text{R} = -\text{CH}_2(\text{CH}_3)\text{CHCH}_2\text{NHCH}_3$
- (ii) $(\text{C}_6\text{H}_5(\text{CH}_3)\text{SiO}_{2/2})_b$
- (iii) $(\text{C}_6\text{H}_5\text{SiO}_{3/2})_c$,

10 aminofunctional silicone resins comprising the units:

- (i) $((\text{CH}_3)\text{RSiO}_{2/2})_b$ where $\text{R} = -\text{CH}_2(\text{CH}_3)\text{CHCH}_2\text{NHCH}_3$
- (ii) $(\text{C}_6\text{H}_5(\text{CH}_3)\text{SiO}_{2/2})_b$
- (iii) $(\text{C}_6\text{H}_5\text{SiO}_{3/2})_c$,

aminofunctional silicone resins comprising the units:

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- (i) $((\text{CH}_3)_2\text{RSiO}_{1/2})_a$ where $\text{R} = -\text{CH}_2(\text{CH}_3)\text{CHCH}_2\text{NHCH}_3$
- (ii) $(\text{C}_6\text{H}_5(\text{CH}_3)\text{SiO}_{2/2})_b$
- (iii) $(\text{SiO}_{4/2})_d$, or

aminofunctional silicone resins comprising the units:

- (i) $((\text{CH}_3)_3\text{SiO}_{1/2})_a$
- 20 (ii) $(\text{C}_6\text{H}_5(\text{CH}_3)\text{SiO}_{2/2})_b$
- (iii) $((\text{CH}_3)\text{RSiO}_{2/2})_b$ where $\text{R} = -\text{CH}_2\text{CH}_2\text{CH}_2\text{NH}_2$
- (iv) $(\text{C}_6\text{H}_5\text{SiO}_{3/2})_c$
- (v) $(\text{SiO}_{4/2})_d$

wherein a, b, c, and d are as defined above.

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7. An emulsion composition comprising:

- (A) an aminofunctional silicone resin of any of claims 1-6;
- (B) at least one surfactant; and
- (C) water.

8. An emulsion composition according to Claim 7 wherein a has a value of 0.1 to 0.3, b has a value of 0.2 to 0.4, c has a value of 0.2 to 0.5, d has a value of 0, 10 to 30 mole percent of silicon atoms contain aminofunctional hydrocarbon groups in units (i), (ii) or (iii), the -NH- equivalent weight of the aminofunctional silicone resin is from 150 to 350, 20 to 50 weight percent of unit (ii) is present in the aminofunctional silicone resin, 0 to 5 weight percent of unit (ii) are $\text{Me}_2\text{SiO}_2/2$ units in the aminofunctional silicone resin, and from 50 to 75 weight percent of silicon-bonded R groups are silicon-bonded aryl groups.

9. An emulsion composition according to Claim 7 or 8 wherein the surfactant is selected from anionic surfactants, cationic surfactants, nonionic surfactants, amphoteric surfactants, or a combination thereof.

10 10. An emulsion composition according to any of Claims 7-9, wherein the emulsion composition further comprises at least one ingredient selected from fragrances, preservatives, vitamins, ceramides, amino-acid derivatives, liposomes, polyols, botanicals, conditioning agents, glycols, vitamin A, vitamin C, vitamin E, Pro-Vitamin B5, sunscreen agents, humectants, preservatives, emollients, occlusive agents, esters, pigments, or self-tanning agents.

20 11 An emulsion composition according to any of Claims 8-10, wherein the emulsion is in the form of spray-dried composite particles.